The second and third medals were awarded to Mr. Glen H. Curtiss and M. Gustave Eiffel, the former "for advancing the art of aerodromics by his successful development of a hydro-aerodrome, whereby the safety of the aviator has been greatly enhanced," and the latter "for advancing the science of aerodromics by his researches relating to the resistance of the air in connection with aviation."

The orations are interesting reading, especially that by Dr. Brashear, who was one of Prof. Langley's oldest and closest friends.

The publication contains reproductions of the Langley Tablet and of the two handsome medals. The illustration of the medal awarded to M. Eiffel is here reproduced.

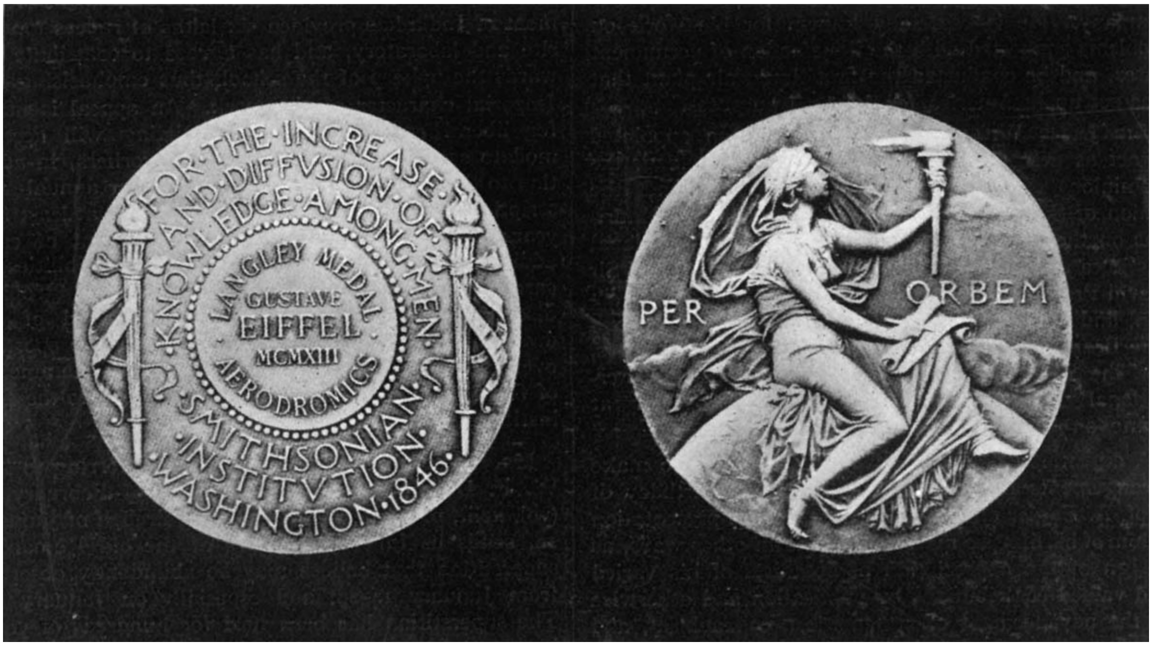

FOR·THE·INCREASE·AND·DIFFVSION·OF·KNOWLEDGE·AMONG·MEN·
LANGLEY MEDAL
GUSTAVE
EIFFEL
MCMXIII
AERODROMICS
SMITHSONIAN·INSTITVTION·WASHINGTON·1846·
PER ORBEM

FIG. 1.—Langley medal presented to M. Gnstave Eiffel.

At the close of the exercises, the secretary directed attention to the action of the Board of Regents, who have decided on the re-opening of the Langley Aerodynamical Laboratory. Sufficient provision is available to start and continue the work in a modest way, and it is hoped that investigations under the name of Langley will be pursued to develop and standardise aeronautical science.

Such an institution well organised and equipped would be a noble monument to the man, and one which he, no doubt, would have most desired.

NOTES.

THE attention of the British Science Guild was directed towards the end of last year to the fact that the Post Office authorities were contemplating a charge of two guineas, in respect of licences in connection with apparatus proposed to be installed by owners of observatories, watch and clock makers, &c., for the purpose of receiving the international wireless time signals sent out from the Eiffel Tower. Protests against the proposed tax had been forwarded to the Post Office authorities by the National Association of Goldsmiths, the British Horological Institute, and Mr. F. Hope-Jones, chairman of the Wireless Society of London. In consequence of the representations made to it upon the subject, an inquiry was instituted by the British Science Guild in relation to the wisdom of the policy of levying such a charge at the present time, the possibility of collecting the same economically in the event of the policy being persisted in, as well as in relation to the powers conferred on the Postmaster-General under the Wireless Telegraphy Act, 1904. The result of this inquiry was such as to persuade the guild that the imposition of a tax would be impolitic, and at the same time would not be likely to produce a revenue commensurate with the expense involved in attempting to collect the same, whilst such a tax could not fail to give rise to intense irritation. As was pointed out in an article in NATURE of November 13, 1913 (p. 320), it appeared to be extremely doubtful whether the Postmaster-General possessed statutory authority to impose such a tax, since by the terms of the Wireless Telegraphy Act, 1904, it is expressly provided that "nothing in this Act shall prevent any person from making or using electrical apparatus for any purpose other than the transmission of messages." The views of the British Science Guild were recently forwarded to the Secretary of the Post Office, who was desired to place the document containing these views before the Postmaster-General for his consideration, and at the same time the Postmaster-General was requested to receive a deputation from the guild in relation to this matter. We learn that the representations of the British Science Guild and other bodies have been considered by the Postmaster-General, who has now intimated that he does not intend to proceed with the proposal to levy the contemplated tax.

PROF. P. EHRLICH, director of the Royal Institute for Experimental Therapeutics, Frankfort-on-Main, has been awarded the Cameron prize of the University of Edinburgh, in recognition of his discovery of salvarsan, of his researches on numerous synthetic organic compounds of arsenic, and of his important work on immunity.

THE twenty-third annual meeting of the Royal Society for the Protection of Birds will be held at the Westminster Palace Hotel, Victoria Street, London, S.W., on Thursday next, March 5. The chair will be taken at 3 p.m. by the Right Hon. Lord Newton. A resolution will be submitted in favour of the Government Plumage Bill.

PROF. W. P. BRADLEY, who has occupied the chair of chemistry at Wesleyan University, Middletown, Connecticut, since 1893, has resigned that post on accepting a position as chemist with a large rubber company. He is especially known for his work on problems connected with the liquefaction of permanent gases, and he conducted the first liquid air plant that was set up in America for research purposes.

SIR JAMES WILSON, K.C.S.I., has been appointed to act as delegate for Great Britain and Ireland, the Dominions of Canada, Australia, New Zealand, the Union of South Africa, and the Government of Mauritius on the permanent committee of the International Institute of Agriculture at Rome. Lieut.-Colonel Sir David Prain, director of Kew Gardens, Sir James Wilson, and Mr. A G. L. Rogers, head of the Horticulture Branch of the Board of Agriculture and Fisheries, are the representatives of the Board at the International Phytopathological Conference opened at Rome on Tuesday, February 24.

A COMMITTEE has been appointed in Berlin to make arrangements to celebrate the seventieth birthday of Prof. A. Engler on March 25 next, by the presentation to him of his life-size marble bust and in other ways, as a sign of the appreciation of botanists of his varied and valued contributions by publication and otherwise to the advancement of systematic, geographical, and economic botany. Readers of NATURE who may wish to join the botanists of Germany and other countries in this celebration are invited to send their subscription to Prof. T Johnson, Royal College of Science, Dublin, for transmission to, and acknowledgment by, Prof. L. Wittmack, of Berlin.

AT the anniversary meeting of the Geological Society of London, held on Friday last, February 20, the officers were appointed for the ensuing year as follows:—*President,* Dr. A. Smith Woodward, F.R.S.; *Vice-Presidents,* Dr. H. H. Bemrose, Mr. W. Hill, Mr. Clement Reid, F.R.S., and Dr. A. Strahan, F.R.S.; *Secretaries,* Dr. H. H. Thomas and Dr. H. Lapworth; *Foreign Secretary,* Sir Archibald Geikie, O.M., K.C.B., F.R.S.; *Treasurer,* Mr. Bedford McNeill. The awards of medals and funds, announced in NATURE of January 15 (p. 561) were made. The president delivered his anniversary address, which dealt with problems of post-glacial denudation.

AT the annual general meeting of the Physical Society of London on February 13, the following officers were elected for the ensuing year:—*President:* Sir J. J. Thomson, O.M., F.R.S. *Vice-Presidents* (not including those who have filled the office of president): Prof. T. Mather, F.R.S., Dr. A. Russell, Mr. F. E. Smith, and Mr. R. S. Whipple. *Secretaries:* Mr. W. R. Cooper and Dr. S. W. J. Smith. *Foreign Secretary:* Dr. R. T. Glazebrook, F.R.S. *Treasurer:* Mr. W. Duddell, F.R.S.. *Librarian:* Dr. S. W. J. Smith. *Other Members of Council:* Dr. W. H. Eccles, Sir R. A. Hadfield, F.R.S., Prof. G. W. O. Howe, Prof. J. W. Nicholson, Major W. A. J. O'Meara, C.M.G., Mr. C. C. Paterson, Prof. O. W. Richardson, F.R.S., Prof. the Hon. R. J. Strutt, F.R.S., Dr. W. E. Sumpner, and Dr. R. S. Willows. *Assistant Secretary and Reporter:* Mr. J. Guild.

WE learn from *The Pioneer Mail* that the foundation-stone of the School of Tropical Medicine at Calcutta was to have been laid on February 24. The Government of India has provided six lakhs of rupees for the site and laboratory, and has agreed to contribute towards the upkeep of the school, thus emphasising the Imperial character of the work. An appeal is made for liberal endowments. The building will accommodate several whole-time research workers, in addition to the teaching staff. Four lakhs, or annual subscriptions of 20,000 rupees, guaranteed for at least five years, will be required for the endowment of each additional research investigator. The possibilities of carrying out important investigations of tropical diseases, which cause more than one-third of the deaths in Calcutta, and at least as large a proportion over India as a whole, are limited only by the amount of financial support which may be afforded to the new institution.

MR. VICTOR ANESTIN, of Bucharest, referring to Mr. W. F. Denning's note in our issue of February 12 (vol. xcii., p. 670) on the detonating fireball of January 19, sends us fuller particulars of the old Rumanian superstition that bolides may be abundantly observed from January 14–20, and especially on January 19. The superstition has been held for hundreds of years by peasants and townsfolk alike. The belief is that on January 19 "les cieux s'entr'ouvrent," and young people look out for this celestial phenomenon, believing that if they offer up a wish at the moment of its occurrence it will be granted during the same year. The same belief is held concerning the appearance of fireballs on November 17. In both these months the sky is always covered with cloud at Bucharest, so that a bright fireball produces an effect of the heavens opening as expressed in the superstition. The date January 19 is, however, not fixed; sometimes the meteors are seen several days before, and at other times after that date. Thus in 1906 "le ciel s'est entr'ouvert" on January 14, and this year the luminous effects of the meteors were seen on January 21.

DR. LOUIS BELL writes from Boston, U.S.A., to describe an unusual meteorological phenomenon observed there last month. On January 13, which was the coldest day known in Boston for many years, the thermometer not ranging above zero for a period of thirty hours extending through the entire day, Dr. Bell, upon entering a large train shed, some 75 ft. high and of a very extensive area, found that snow was steadily falling, produced by the congelation of the steam from the numerous locomotives. The interesting point was that the snow had aggregated into flakes of fair size, not distinctly crystalline, but still flakes, in spite of the short distance of the possible fall. The thermometer was then about 5° F. below zero, and in the evening at a similar temperature the whole interior of the train shed was still white with this deposit of snow. The general phenomenon, of course, has been many times recorded, but is very rarely seen, particularly on so large a scale and for so long a time.

THE exceptionally mild character of the present winter is being maintained until its close, and for a persistent continuance of warm days in January and February it surpasses all previous records. At Greenwich the thermometer in the screen was above 50° for eighteen consecutive days from January 29 to February 15 Previous records since 1841 have no longer period than eleven days, in the months of January and February combined, with the thermometer continuously above 50°, and there are only four such periods—1846, January 21–31; 1849, January 16–26; 1856, February 6–16; and 1873, January 4–14. Besides these there are only three years, 1850, 1869, and 1877 with a consecutive period of ten days in January and February with the temperature above 50°. The persistent continuance of the absence of frost is also very nearly a record. To February 24 there have been thirty consecutive days at Greenwich without frost in the screen, and the only years with a longer continuous period in January and February are 1867, with thirty-seven days, 1872, with forty-three days, and 1884, with thirty-two days. The maximum temperatures in the two months have seldom been surpassed. In many respects there is a resemblance between the weather this winter and that in 1899, when in February blizzards and snowstorms were severe on the other side of the Atlantic, with tremendous windstorms in the open ocean, whilst on this side of the Atlantic the weather was exceptionally mild. It is to be hoped that this year we shall be spared the somewhat sharp frosts experienced in the spring of 1899.

THE annual Home Office report and statistics of the output of mines and quarries in Great Britain for the year 1912 has been published. It is greatly to be regretted that the report should take nearly a twelvemonth before the definite figures of the year's mineral production can be published, as by this time these figures present but little interest. It is true that the approximate figures issued at an earlier date give a great deal of the information, and that the early figures rarely require much alteration. As a matter of fact, however, the Department of Mineral Statistics, like so many departments of the Government that do useful but not showy work, is neglected in favour of others that make a more direct appeal to the gallery. Our Department of Mineral Statistics is understaffed, and the collection and definition of mineral statistics are not, as they should be, controlled by precise and definite legal enactments. Thus it is impossible to know from the report whether the item coal means "drawings," inclusive of "walings," or whether it refers to clean coal only; or, again, whether the quantity of coal is inclusive or exclusive of colliery consumption. What is really needed in this country is a brief Mineral Statistics Act, regulating the precise manner in which the various statistics should be collected and tabulated, and giving legal force to the definitions now so loosely employed, and if such an Act could be drawn up as the result of an international conference, so that the statistics of the great mineral-producing countries of the world could be correctly compared with each other, a great advance would be made towards the scientific study of this important branch of knowledge.

IN the February issue of *Man,* Sir C. H. Read describes a remarkable Bactrian bronze ceremonial axe which has been recently added to the British Museum collections. It is composed of the figures of three animals—a boar, a tiger, and an ibex. The cutting edge is formed of the back of the first, which is attacking the tiger, who is turning round and gripping the flanks of a crouching ibex. Our present scanty knowledge of the archæology of Afghanistan in the centuries preceding the Sassanian dynasty does not admit of any distinct statement of the uses to which an object of this kind might be put, nor are we able to interpret the symbolism of the conjunction of these three animals. The nearest analogy is an axe presented to the British Museum by Major P. M. Sykes, from Kerman in Persia. In this the animal forms are degraded and almost lost; but a second axe of the same find has the beasts standing free and well-defined, though the execution is not so artistic as in the present example, which, by comparison with the Oxus treasure in the museum, is probably a specimen of the art of Bactria about the time of Alexander the Great.

ACCORDING to the reports published in the December issue of the Proceedings for 1913, the Philadelphia Academy of Sciences appears to have had a prosperous year, having received during that period two considerable money bequests, while a number of cases in the museum have been rearranged. The accessions to the library were nearly 1000 in excess of those in the preceding year.

PARTS viii. and ix. of Dr. Koningsberger's "Java" contain a brief account of the fishes of the island—both fresh-water and marine—which are stated to be still very imperfectly known. Another section is devoted to the reptiles, in which it is stated that Schlegel's gharial (*Tomistoma schlegeli*), of Sumatra, Borneo, and the Malay Peninsula, may not improbably occur in Java, although definite evidence is not yet forthcoming.

THE question whether a certain number of fertilised female house-flies (*Musca domestica*) pass the winter in a dormant condition, to revive and produce progeny in the spring, according to a note by Mr. E. A. Austen, of the British Museum, in the February number of *The Entomologist's Monthly Magazine,* still awaits a definite answer. An American observer, Dr. H. Skinner, has, indeed, committed himself to the statement that house-flies pass the winter only in the pupa-stage, but this is not in accord with the views of Messrs. Newstead and Jepson in this country. The point is of considerable importance in connection with the crusade against house-flies as disseminators of disease.

To the Journal of the East Africa and Uganda Natural History Society for December, 1913, Mr. R. B. Woosnam, Game Warden for British East Africa, communicates an important article on the relation of game animals to disease in Africa, with special reference to the proposal to clear off such game animals in certain parts of East Africa with a view of stamping out tsetse-fly disease and other maladies. The theory hitherto largely favoured by experts is that game animals alone serve as "reservoirs" for the trypanosomes, and other blood-parasites, by which such diseases are caused; but the author points out that not only is there a strong probability, but likewise a practical certainty, that other animals serve in a similar capacity. And this being so, the futility of attempting to kill off all the game animals in certain districts is self-apparent. In the opinion of the author, a far more hopeful plan is to rely on the possibility of producing or accelerating immunity to the diseases in question in the animals liable to be infected. "If," writes Mr. Woosnam, "wild animals can acquire an immunity in nature and domestic native cattle can also acquire immunity [which in certain instances they undoubtedly do], is it not possible that the greatest success may eventually result from an artificially produced immunity?"

In a valuable report on the effect of water on the cultivation of cotton (Egyptian Ministry of Finance Survey Department, Paper No. 31, 1913), Messrs. Hughes and Hurst, who were assisted in their field work by Messrs. Bolland and Ferrar, give details of a series of experiments made with a view of eliminating other factors in an estimate of the influence upon the cotton yield of the level of saturation in the soil. Their general conclusion is that with the subsoil water at a low level fairly heavy watering gives greater yields than very light watering, which may easily be pushed so far as seriously to affect the yield. They find, however, that fairly heavy watering delays the ripening of the crop, and they point out that too wide an interpretation is not to be placed on the results obtained from the experiments, the chief importance of which lies in the methods adopted, especially the arrangement of the experimental plots in such a manner as approximately to eliminate the effect of factors which varied from point to point of the fields.

It would appear, from investigations by Mr. W. R. Dunlop (*West Indian Bulletin*, vol. xiii., No. 4), that certain groups of varieties of sugar-canes possess differentiating characteristics as regards their stomata, and that if the general morphological and anatomical characters of the varieties be taken into consideration, each one variety can be identified by its leaf alone. The stomatal density per unit of area is one of the chief characteristics, though in the investigation under review the range of variation has not been determined with sufficient accuracy to permit more than the classification of the varieties examined into groups as regards stomatal densities. The relation of the ratio of the total stomatal area to the entire surface of the leaf, and the susceptibility of any variety to drought is discussed, and actual observation has shown that a variety possessing a high stomatal area with other hydrophyllous characters appears to be unsuited for cultivation in areas of low rainfall and humidity. Whether any general relation exists between sucrose content of varieties and stomatal characteristics has yet to be determined, but such observations would appear to provide a useful guide in future selection of sugar-cane for drought resistance.

One of the useful articles in the recently published Journal of the Scottish Meteorological Society (vol. xvi) is a somewhat laborious investigation of "A Possible Two-hourly Period in the Diurnal Variation of the Barometer," by Mr. M. M'Callum Fairgrieve. The paper was suggested by certain departures from a smooth curve every alternate hour, shown by the result given by Dr. Chree in a paper on the barometric pressure at Castle O'er (Quart. Journ. Roy. Met. Soc., October, 1911). Mr. Fairgrieve examined long series of observations at some of the Meteorological Office observatories, and other places, and found that a two-hourly oscillation was very apparent at certain places, while at others there was little indication of any such variation. The author finds it difficult to assign a proper explanation of the results obtained, whether physical or instrumental, but suggests that it is obviously of importance that the point should be cleared up.

It is well known that while the number of regular solids is limited, a similar limitation extends to "polytopes" in multi-dimensional space, the cube, regular tetrahedron and octahedron being the only types which can be extended indefinitely to the higher dimensions. There are, however, certain semi-regular polyhedra which play an important part in crystallography. We have now received papers from Dr. P. H. Schoute, reprinted from the transactions of the Cambridge Mathematical Congress, and Dr. E. L. Elte (Amsterdam Proceedings, 1912), dealing with the different degrees of regularity and characteristics of the various semi-regular polytopes in multi-dimensional space. While these interesting problems are being competently treated by mathematicians, the popular fallacy of "*the fourth*" dimension seems as hard to eradicate as ever. Prof. Samuel M. Barton's article in *The Popular Science Monthly* for October is correct enough in its geometrical facts, but the use of the word "fourth," for the more correct terms, "four" and "many," will be likely to militate against the usefulness that would accrue from an essay dealing professedly with "hyperspaces."

After conference with the American incandescent lamp manufacturers, the United States Bureau of Standards has issued a sixth edition of its circular containing standard specifications for such lamps. Although the specifications were originally intended for the use of Government departments only, the public has made such large demands for them that an annual edition has appeared since the circular was first printed in 1907. Another circular for which the demand is likely to be extensive is that on copper wires, prepared at the request of the American Institute of Electrical Engineers. It contains nearly seventy pages of tables and other information about copper wire, brought thoroughly up to date, last year's work of Mr. G. L. Heath on the relation between the purity and temperature coefficient of resistance of wires being included.

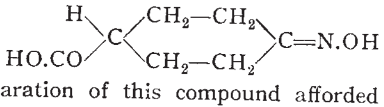
The January number, which begins the career of the *Annales de Physique* as a separate publication, consists of ninety-six pages of the same size and style as the *Annales de Physique et de Chimie* have made us familiar with in the past. The annual volume is to extend to nearly 600 pages, and the price outside France is to be 28 francs. Profs. Lippmann and Bouty are the editors, and the first number is certainly a credit to them. It contains a communication by M. Violle on physical units to be adopted in France, a second by M. Brillouin on a relation between specific heat and radiation of a body independent of the quantum hypothesis, a third by M. Marcelin on the thickness of films spread on the surface of water, in which it is shown that the thickness of a camphor film may be as small as the diameter of a camphor molecule, and, lastly, the first part of a long paper by M. Croze describing experiments on the emission spectra of the commoner gases

A circular (No. 43) has been issued by the Bureau of Standards at Washington with reference to the international metric carat of 200 mg., which was adopted on July 1 last by the United States customs service as the unit for determining the import duties on precious stones. Tables of equivalents are included in the circular, which will be useful to diamond dealers in converting from the old unit to the new and *vice versâ*. The value adopted for the old carat is 205·3 mg., which is the average weight of the various carats previously in use in the United States. This is precisely the same value as that of the old carat hitherto used in the United Kingdom, which is to be displaced on April 1 next by the metric carat of 200 mg., in accordance with the Order in Council of October 14 last. The tables would accordingly be useful also to British jewellers for conversion purposes; they are much more complete and practicable than those issued by some American firms of gem dealers in the form of "folders," and are followed by some valuable hints on the care and use of balances and weights for weighing precious stones.

The July to December, 1912, number of *Isis*, the publication of the Dresden Society for Natural Knowledge, contains a paper by Mr. H. Dember on the relationship between atmospheric electricity and wireless telegraphy. The theory has been advanced that electric waves suffer reflection from an ionised layer in the upper atmosphere, and that the development of this layer by day causes the difference between day and night wireless phenomena discovered by Marconi. The author's object was to secure direct evidence of such ionisation. As ultra-violet light is rapidly absorbed by the earth's atmosphere, he pursued his inquiries in Switzerland, near Arolla, at considerable heights, the one 2000, the other 3400 metres, above sea-level. The ionising action of sunlight, it is argued, must increase equally the number of negative and of positive ions. The latter normally preponderate in number, thus sunlight must tend to increase the ratio borne by the number of negative to the number of positive ions. The free ionic charges in the atmosphere were observed in the usual way with Ebert's apparatus, while the ultra-violet radiation was simultaneously measured by a simple apparatus designed by the author. The results of the observations, which were made on five days in August and September, 1911, are illustrated by figures, which show on the whole a parallelism between the variations of the ultra-violet radiation and the magnitude of the ratio of the ionic negative to the ionic positive charges. The author allows that the observed effect, even at 3400 metres, was probably due in large part to a vertical current or convection of ions produced at greater heights in the atmosphere. The same paper describes some interesting observations on the absorption of sunlight of various wave-lengths made in August, 1912, in the Italian Alps, with a new apparatus. The results are discussed in reference to Lord Rayleigh's theory of atmospheric action.

The "Wratten and Wainwright Division" of Kodak, Limited, have just issued a fifty-page pamphlet on reproduction work with dry plates. They make out a very strong case for the use of panchromatic gelatine plates in direct screen negative making for three-colour work, claiming not only that gelatine is as good as collodion, but that it is much preferable, when the photographer has become accustomed to it. But the plate must have a fine grain, be very sensitive to red and green, and give great density and contrast, characteristics which are found in the Wratten process panchromatic plate, which is rendered colour sensitive by "bathing," that is, immersion in the dye solution after the plate is coated. The pamphlet is intended for the guidance of the block-maker, and gives detailed suggestions with regard to each step in the process. We learn that the laws of geometrical projection are good and sufficient guides for regulating screen-distance, so that after the innumerable pages that have been written on this subject, the whole matter may, for practical purposes, be expressed in a line or two. The reason why greens are so difficult to reproduce is fully explained. A choice of six pairs of colour filters for two-colour work is given, and there are several other items of interest, even to those who regard such matters from a merely theoretical point of view.

Much interest was aroused by the preparation in 1910 of an optically-active oxime of the formula



The preparation of this compound afforded the first concrete evidence that the three bonds of the nitrogen atom were not in a plane, and so provided a solid foundation for the theory which Hantzsch and Werner had put forward in 1890 to account for the isomerism of certain oximes of the aromatic series. In the January issue of the Chemical Society's Journal, Dr. W. H. Mills and Miss Bain describe an extension of these experiments, in which they have succeeded in isolating active salts of the semicarbazone,

$$>C{=}N.NH.CO.NH_2,$$

and benzoylphenylhydrazone,

$$>C{=}N.N(C_6H_5).CO.C_6H_5,$$

of the same ketone. The resolution of the former compound was effected by means of morphine, that of the latter by means of quinine. The rotatory powers were transient, but of large magnitude, $[M]_D$ 30 to 40° for the semicarbazone, and as high as $[M]_D$ 238° for the hydrazone. The experiments strongly support the hypothesis that "the three valencies of the doubly-linked nitrogen atom do not lie in one plane, but are directed along the three edges of a trihedral angle."

The control system of the Panama Canal locks is described in *Engineering* for February 20. The control houses contain horizontal control boards—the board at Gatun is 64 ft. long—on which are arranged all the control handles and indicators, the board taking the form of a miniature representation of the locks. Indicators are provided showing the opening of the various valves, the height of water in the locks, &c. Small model leaves show each gate in plan, and working models of the chain fenders are also provided at the proper places. All the indicators and models follow and reproduce the conditions in the full-size lock exactly, except in certain cases, when an "open" or "closed" indication suffices. The form of indication system adopted is of interest. Step movements such as are obtainable with ratchets, &c., were ruled out as inadequate, and an electrical system involving the use of 732 small indicator motors has been developed. A complete synchronous indicator set consists of a transmitter, located at, and driven by, the operating machine, whether in the case of the sluice-valves or other gear, and a receiver and indicator worked thereby in the control house.

Directors of education and others responsible for the erection and fitting of new science laboratories would do well to study the new, excellently illustrated catalogue entitled "Laboratory Fittings and Furniture," published by Messrs. Reynolds and Branson, Ltd., of Leeds. The plans and photographs of recent laboratories, for the fitting and equipment of which this firm has been responsible, which are included in the catalogue, will prove useful guides for persons planning new laboratories, and the other particulars will be found arranged in a manner which makes reference very easy.

OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences for March :—

March 2. 11h 0m. Saturn at quadrature to the Sun.
3. 21h. 36m. Jupiter in conjunction with Uranus (Jupiter 0° 9′ N.).
4. 14h. 39m. Saturn in conjunction with the Moon (Saturn 6° 47′ S.).
6. 14h. 44m. Mars in conjunction with the Moon (Mars 1° 49′ S.).
7. 20h. 6m. Neptune in conjunction with the Moon (Neptune 4° 35′ S.).
10. 4h. 0m. Mercury in inferior conjunction with the Sun.
11. 16h. 13m. Moon eclipsed, partly visible at Greenwich.
20. 23h. 11m. Sun enters sign of Aries; spring commences.
21. 14h. 58m. Uranus in conjunction with the Moon (Uranus 2° 32′ N.).
,, 20h. 39m. Jupiter in conjunction with the Moon (Jupiter 2° 26′ N.).
22. 6h. 0m. Mars at greatest heliocentric latitude N.
,, 13h. 0m. Mercury stationary.
24. 4h. 16m. Mercury in conjunction with the Moon (Mercury 1° 8′ N.).
27. 9h. 55m. Venus in conjunction with the Moon (Venus 4° 16′ S.).

A Faint Companion to Capella.—An interesting discovery has been made by Dr. R. Furuhjelm (*Astronomische Nachrichten,* No. 4715), who has found that Capella, a spectroscopic double star, is accompanied by a faint companion (phot. mag. 10·6) at a very great distance. The absolute positions of the stars, according to the Helsingfors Catalogue plates are as follows :—

	α 1900·0				δ 1900·0			Epoch
	h.	m.	s.		°	′	″	
Capella ...	5	9	18·09	...	+45	53	49·1	1895·42
The faint star	5	10	1·26	...	+45	44	23·9	

The companion is distant from Capella by 12′ 3·3″, and the position angle is 141° 20′. The discovery was made by comparing the proper motions of the stars in the neighbourhood of Capella determined from photographs of the region taken at two different epochs at Helsingfors. Dr. Furuhjelm's proper motion for the faint star gave the values 0·422″ in the direction 170·9°, while the values for Capella as determined by Boss were 0·438″ in the direction 168·7°. Other stars in the vicinity have no such physical relationship.

The Solar System.—The following neat empirical formula connecting certain elements of the known planetary satellites is given by M. F. Ollive in a modest little note communicated to the French Academy of Sciences (*Comptes rendus,* vol. clvii., No. 26, p. 1501). Let R' represent the mean distance of the satellite from the planet around which it gravitates, v' its orbital velocity, R the mean distance of the planet from the sun, and r its mean radius, then, M. Ollive states, $r^3 = kRR'v'^2$. In c.g.s. units the constant $k = 4{\cdot}313 \times 10^{-8}$.

The data for the twenty-six known satellites in the solar system necessary for calculating the planetary radii are tabulated, together with the deduced ratio of the radius of the planet to that of the earth compared with the measured values. The formula gives the radius of the earth with great accuracy, the ratio deduced/measured being 1·0001, according to our calculation; for Mars also the deduced radii are almost identical *inter se,* and with the measured value. For Jupiter and Saturn, whilst the deduced values are highly consistent among themselves, except that given by Saturn's ninth and most distant satellite, they are slightly in excess (approx. 6 per cent. and 2 per cent. respectively) of the measured radii. For Uranus and Neptune the formula gives results roughly 50 per cent. and 100 per cent. too high respectively.

Periodicities in Prominences and Sun-spots Compared.—In this column in November last (vol. xcii., No. 2297, p. 302) reference was made to Mr. T. Royds's investigation on prominence periodicities by the periodogram method. In a recent Kodaikanal Observatory Bulletin (No. 34) he undertakes the task